

PACIFIC ELECTRIC ROW/ WEST SANTA ANA BRANCH CORRIDOR

ALTERNATIVES ANALYSIS REPORT INITIAL EXECUTIVE SUMMARY



CONNECTING COMMUNITIES BETWEEN LOS ANGELES AND ORANGE COUNTIES

March 16, 2012



SOUTHERN CALIFORNIA
ASSOCIATION of GOVERNMENTS



WEST SANTA ANA BRANCH

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Introduction

An Alternatives Analysis (AA) study has been completed to explore transit opportunities for connecting Los Angeles and Orange counties and serving future travel needs through the reuse of the PEROW/WSAB Corridor. While focusing on the former Pacific Electric Railway right-of-way (ROW), the study evaluated possible connections from the ROW north to Union Station, and south to the Santa Ana Regional Transportation Center (SARTC).

The purpose of the study was to identify and evaluate a wide range of possible transit system alternatives, and to provide the public and decision-makers with technical information on the future Corridor travel needs, and the benefits and impacts of each of the proposed transit alternatives. The study process included three phases of evaluation to screen a wide range of possible alternatives to the most viable alternative(s) that best meets the identified Corridor Purpose and Need and project goals.

In the last study phase, the Final Set of Alternatives was evaluated through conceptual-level engineering and station design, and related technical and environmental analytical efforts. This document provides an overview of the technical results that will be discussed in community and stakeholder outreach activities to identify the preferred alternative(s) in May 2012.

The Final Set of Alternatives were approved by the Project Steering Committee for further study:

-  The **No Build** option represents completion of Corridor transit, highway, and other transportation projects that have approved local, regional, state, and federal funding.
-  The **Transportation Systems Management (TSM)** option maximizes the use and effectiveness of the existing transportation system through a set of proposed transit, highway, bicycle, and pedestrian projects.
-  The **Bus Rapid Transit (BRT)** option represents a high capacity, high speed bus service primarily operating in dedicated lanes similar to the Metro Orange Line in Los Angeles County.
-  The **Street Car** alternative proposes building a community-oriented rail system similar to that being considered by the City of Santa Ana, and in operation in Portland and other U.S. cities.
-  The **Light Rail Transit (LRT)** alternative proposes a rail system similar to the Metro Gold and Blue lines currently operated by Metro in Los Angeles.
-  The **Low Speed Magnetic Levitation (Maglev)** alternative proposes service similar to that provided by the Linimo System operating in Nagoya, Japan.



Light Rail Transit (LRT)



Bus rapid Transit (BRT)



Street Car



Low Speed Magnetic Levitation



Purpose and Need

The PEROW/WSAB Corridor is a densely-developed area comprised of the most active hearts of Los Angeles and Orange counties, including Downtown Los Angeles, the Gateway Cities Subregion in Los Angeles County, the growing western and central portions of Orange County, and Downtown Santa Ana. The Corridor has a diverse combination of residential neighborhoods, civic centers, shopping districts and centers, educational institutions, and medical facilities. There are concentrations of employment centers ranging from industrial uses in the northern portion of the Corridor to major office centers in Downtown Los Angeles, Anaheim, and Santa Ana. Downtown Los Angeles and Santa Ana also serve as county civic centers.

The PEROW/WSAB Corridor was recommended for study because of the following characteristics and trends:

- **High population growth.** The Corridor is home today to 4.5 million people – four times the population of San Diego, California’s second largest city. By 2035, population will grow by more than 500,000 residents with one in three Los Angeles and Orange County residents living in the Corridor.
- **High population density.** Population density is projected to increase to an average of 12,000 people per square mile, with portions exceeding 14,000 residents per square mile. These density levels are commensurate with other communities successfully served by Metro and other urban rail systems.
- **High level of employment.** In 2035, the Corridor will remain a major employment destination with more than 2.3 million forecasted jobs – three times higher than San Diego’s total employment. Approximately, 30 percent of all Los Angeles County jobs and 45 percent of Orange County’s total employment are forecasted to be located here.
- **Increasing employment density.** Future Corridor employment densities are forecasted to be 5,400 jobs per square mile, with many areas exceeding that average with a 9,000 to 14,000 job density. Employment densities served by the Los Angeles Metro rail system range from 2,500 (light rail) to 14,000 (heavy rail) jobs per square mile.
- **High number of low-income households.** Currently, more than 36 percent of all Corridor households are designated as low-income – twice the Orange County average and 20 percent higher than the urbanized Los Angeles County average. With the forecast loss of jobs in the Northern Connections area, which includes the communities located between Union Station and the Metro Green Line, the number of low-income households in Los Angeles County is anticipated to continue to increase.



By the year 2035, the magnitude and nature of the Corridor's growth trends are projected to result in continuing transportation challenges:

- **Increasing travel.** By 2035, more than 12.8 million additional daily study area trips will occur in the Corridor. The growth in trips within, to, and from the study area will strain the available transportation network.
- **Continuing highway system congestion.** Even with planned highway system improvements, travelers will experience worsening freeway and arterial congestion. In 2035, 75 percent or more of the Corridor's freeway system will operate at or beyond capacity in both peak periods. Similar impacts will occur on the Corridor's arterial network.
- **Limited travel options.** Currently, Corridor residents must choose between the private automobile and bus transit for travel, with both modes operating on the increasingly congested highway system.
- **Poor connections to the regional transit system.** Residents currently have limited access to the Metro rail and Metrolink systems. The lack of high-capacity transit connections to the regional transit system constrains Corridor mobility and travel choices.
- **Poor linkages to and from destinations and activity centers.** The Corridor contains a diverse and unique set of local, regional, and national destinations. Access will become increasingly constrained due to worsening highway congestion negatively impacting their accessibility and economic vitality.
- **Changing employment patterns.** While employment-rich, the Corridor faces significant job changes and challenges. Forecasts show the Los Angeles County portion continuing to lose manufacturing jobs with more than half a million lost since 1990, while the Orange County section will attract a growing number of jobs.
- **Growing transit-dependent population.** With 16 percent of the study area's households currently lacking access to an automobile, the forecast loss of jobs, and an aging population, an increasing number of the Corridor's residents will need to rely on transit service in the future.

Development of an effective multi-modal transportation network is imperative to meet the future mobility needs of residents and businesses by providing vital linkages both within the Corridor and beyond to the expanding regional transit system.





Stakeholder/Community Input

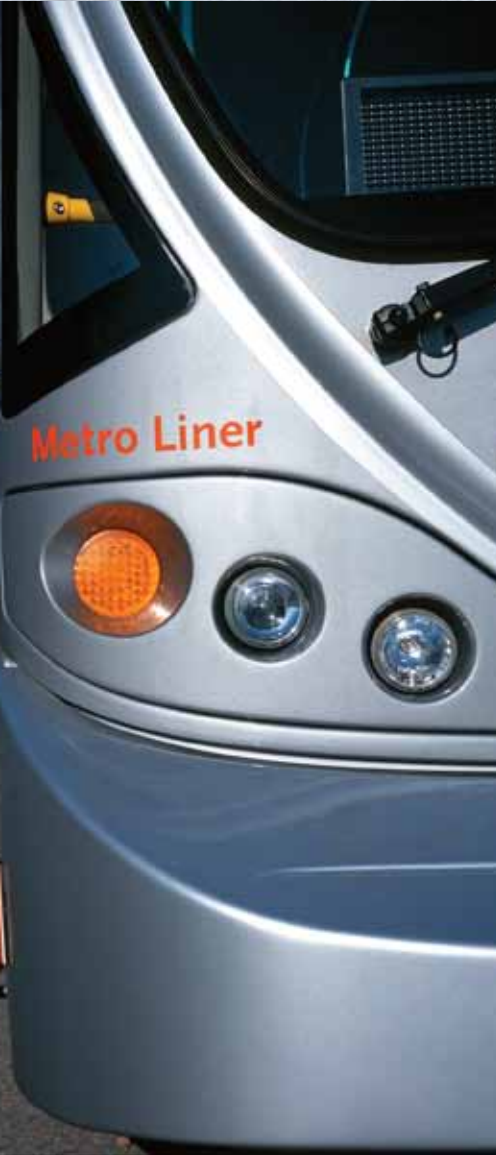
Community and agency input has been integral in shaping the PEROW/WSAB Corridor AA process. Comments were received and documented over the course of the 27-month study at meetings and work sessions with elected officials, stakeholders, advisory committee members, and the public. The following major project themes were identified during these outreach efforts:

- **Current and future traffic congestion will constrain car travel.** Everyone expressed frustration with the current freeway and street congestion, and concerns that congestion would get worse in the future as the highway system is already at or near capacity. Stakeholders anticipated that future population growth will increase the number of cars on the road, and that the limited ability to expand the highway system would be a significant mobility constraint in the future.
- **Current bus transit does not adequately serve transportation needs.** One of the strongest recurring concerns was the belief that bus transit is inconvenient and inefficient. Specific bus service concerns were related to infrequent service, limited hours of operation, slow travel speeds, and the need for frequent transfers and poor coordination between multiple transit providers – all of which contributed to making bus transit travel difficult.
- **Enthusiasm for providing public transit in the Corridor.** Many participants remained excited about the potential for providing high capacity, high speed transit in the Corridor, and were eager to consider and discuss different transportation solutions. They saw the need for public transit to meet future local and regional transportation challenges. Many community members felt that the PEROW/WSAB Corridor ROW was a unique asset that could provide a critical link between Los Angeles and Orange counties.
- **Opportunities for transit-related development and neighborhood revitalization.** Elected officials, agency staff, and community members were interested in utilizing the Corridor transit investment to provide a catalyst for needed residential and commercial development and revitalization. Participants felt that mixed-use development near transit stations would be attractive due to direct transit access, providing faster connections to jobs and services, and creating a pedestrian-friendly environment.
- **Widespread support for trails and open space along the transit system.** Many community members were supportive of creating a linear bicycle and pedestrian trail along the PEROW/WSAB Corridor ROW, and possibly providing adjacent dedicated open space. Stakeholders felt that this pathway system would provide additional connections between transit stations that would complement and increase the use of a transit system.

During the most recent series of community and stakeholder outreach, the major alternative-specific comments were:

- **The No Build Alternative was preferred by some northern Orange County residents living along the PEROW/WSAB Corridor ROW.** Residents expressed significant concerns about implementing a transit system, which could negatively impact their quality of life and property values. The key concerns expressed were related to noise, vibration, and traffic impacts.
- **Bus Rapid Transit (BRT) was seen as a pragmatic and sensible solution, but with significant obstacles to successful implementation.** BRT was viewed possibly as a good solution due to its relatively low cost to build and operate, and perceived shorter construction time. Overall, BRT received lackluster support because many people expressed doubts that the negative public perception of buses could be overcome. Community members doubted its efficiency without dedicated lanes beyond the PEROW/WSAB Corridor ROW.
- **Although not widely considered a right fit for the Corridor, Street Car service was viewed favorably.** Participants liked the street car vehicle, and its slow travel speed was viewed as possibly having less community and environmental impacts than the other alternatives. However, a majority of the community members did not see it as a right fit for this Corridor. The slow travel speed and frequent stops were perceived as meeting local transit needs, but not as addressing regional transportation needs viewed as essential for connecting the Corridor communities.
- **Strong support was expressed for Light Rail Transit (LRT) based on its potential for serving all of the community's transportation needs.** Community members indicated the strongest preference for the LRT option. Many considered it to be an efficient system that would provide the right balance between local and regional service for Corridor communities. Participants felt the station spacing would support community economic development and revitalization needs. LRT was viewed as a familiar technology that has been proven successful locally.
- **A High Speed Maglev Alternative was presented, with many participants expressing that it was an unreasonable solution, but others suggesting a lower speed option that could meet community needs.** Participants were not generally supportive of high speed maglev service, and some people proposed a Low Speed Maglev system option that would have more station stops. Those participants felt that it was more of a cutting-edge approach, and would provide cleaner and quieter service. Others expressed concerns that the technology was unproven in the U.S. and would be incompatible with existing systems.

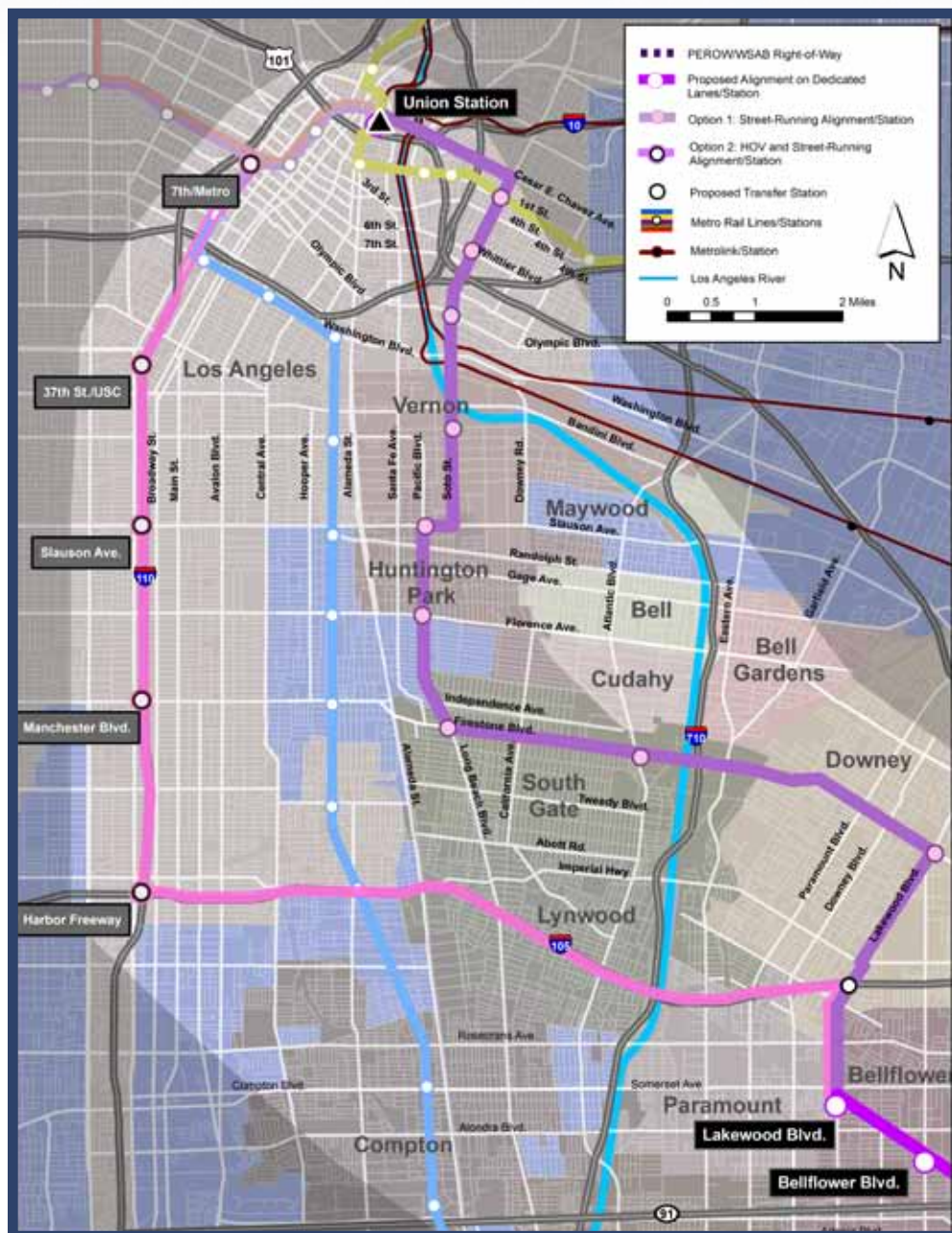




BUS RAPID TRANSIT ALTERNATIVES

Two BRT operational plans were identified and evaluated. Both options have the PEROW/WSAB Corridor and the connection south through Santa Ana city streets in common. The proposed connection north from the end of the PEROW/WSAB Corridor to Downtown Los Angeles differs as illustrated below:

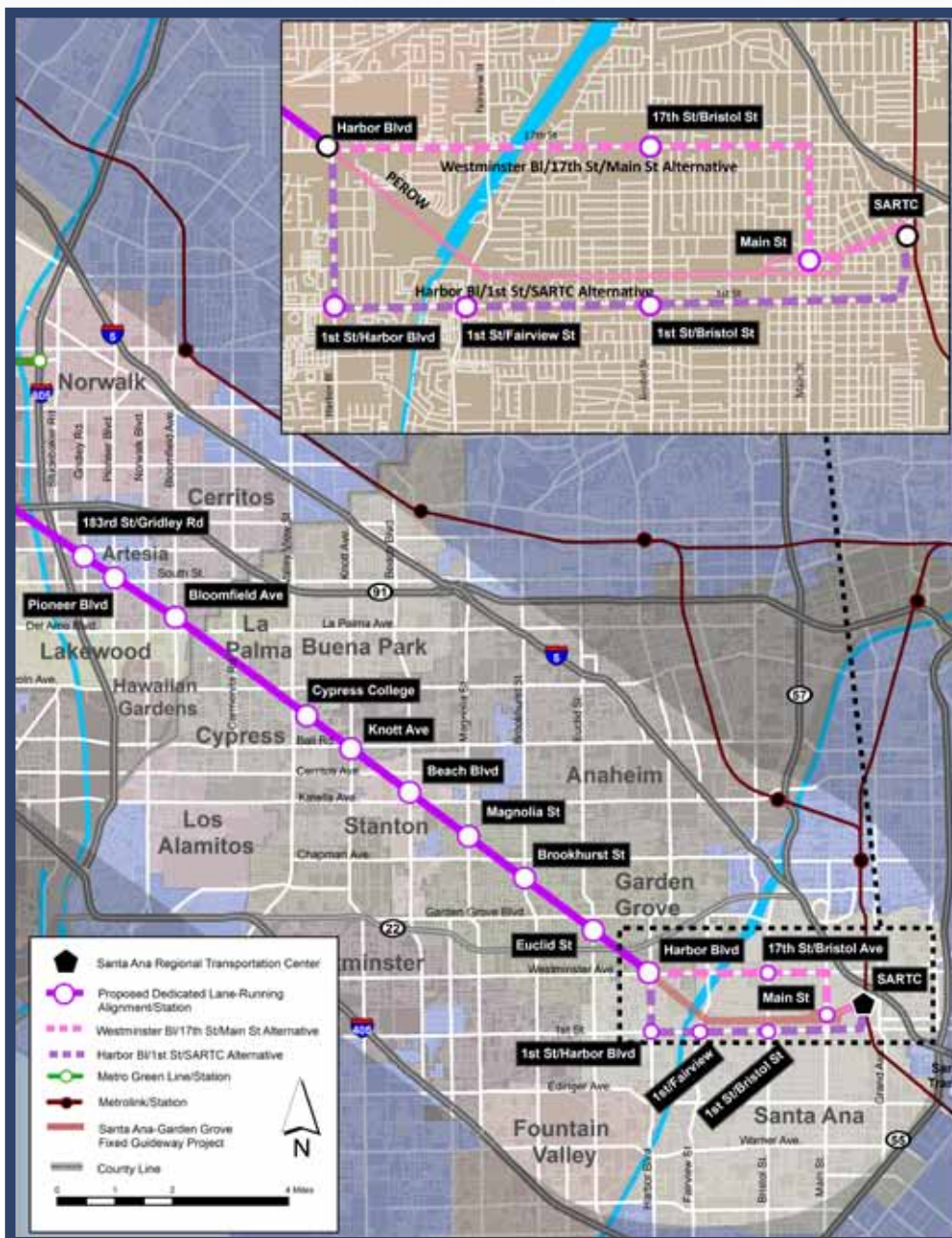
- **HOV Lane-Running Option** would operate in HOV lanes on the I-105 and I-110 freeways to the I-110 Transitway terminus where it would continue in street-running operations. Service would terminate at the 7th/Metro Center Station providing a transfer to the Metro Red, Purple, and Blue rail lines. This service would be operated in 45 foot buses similar to the Metro Silver Line.



- **Street-Running Option** would operate as limited stop service with signal priority. It would leave the PEROW/WSAB Corridor to run north on Lakewood Boulevard to provide a transfer to the Metro Green Line. It would then continue north in street-running operations along city streets, with a stop at the Metro Gold Line, and along Cesar Chavez Avenue to Union Station. This service would be operated in 40 foot buses similar to Metro Rapid service running in the study area.

At the southern end of the PEROW/WSAB Corridor, both BRT options would leave the ROW to operate on Santa Ana city streets along one of the two alternative routes illustrated below:

- **Harbor Boulevard/1st Street/SARTC Option** would serve the Harbor Boulevard Station located on the Corridor ROW and then run south on Harbor Boulevard, turn east on 1st Street. It would run north on a realigned Santiago Street to the SARTC where passengers could transfer to Street Car, Metrolink, and Amtrak services, along with OCTA and international bus services.



- **Westminister Boulevard/17th Street/Main Street Option** would run east from the Harbor Boulevard Station on Westminister Boulevard/17th Street, south on Main Street to interface with the city of Santa Ana's Street Car system, and continue to SARTC via Santa Ana Boulevard.



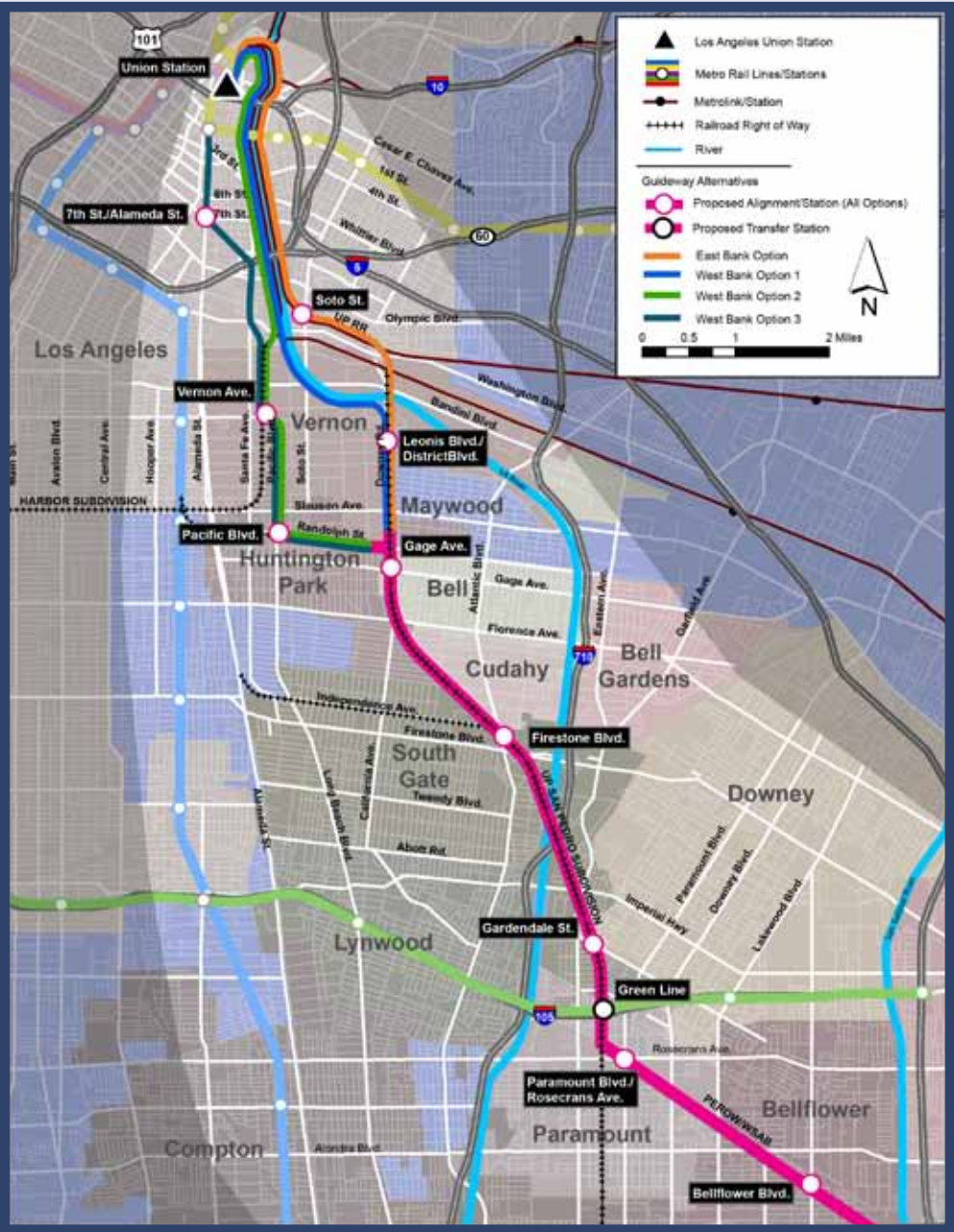
GUIDEWAY ALTERNATIVES

Three of the build alternatives that would operate on a steel wheel or concrete guideway system:

- The **Street Car Alternative** is a rail system similar to that being considered by Santa Ana, and in operation in Portland and other U.S. cities.
- The **Light Rail Transit (LRT) Alternative** is similar to the Metro Gold and Blue Lines operated in Los Angeles County.
- The **Low Speed Magnetic Levitation (Maglev) Alternative** is similar to the Japanese Linimo System, the only system currently in revenue operation.

All three guideway alternatives utilize the PEROW/WSAB Corridor, while the Northern Connection Area and Southern Connection Area have alignment options that were studied.

In the Northern Connection Area, four possible alignments were identified all using the San Pedro Subdivision, and street and rail ROWs to connect north to Union Station. There are two sets of options in this area running either along the east or west bank of the Los Angeles River. The East Bank Alternative has one viable alignment option and the West Bank Alternative has three possible routes.



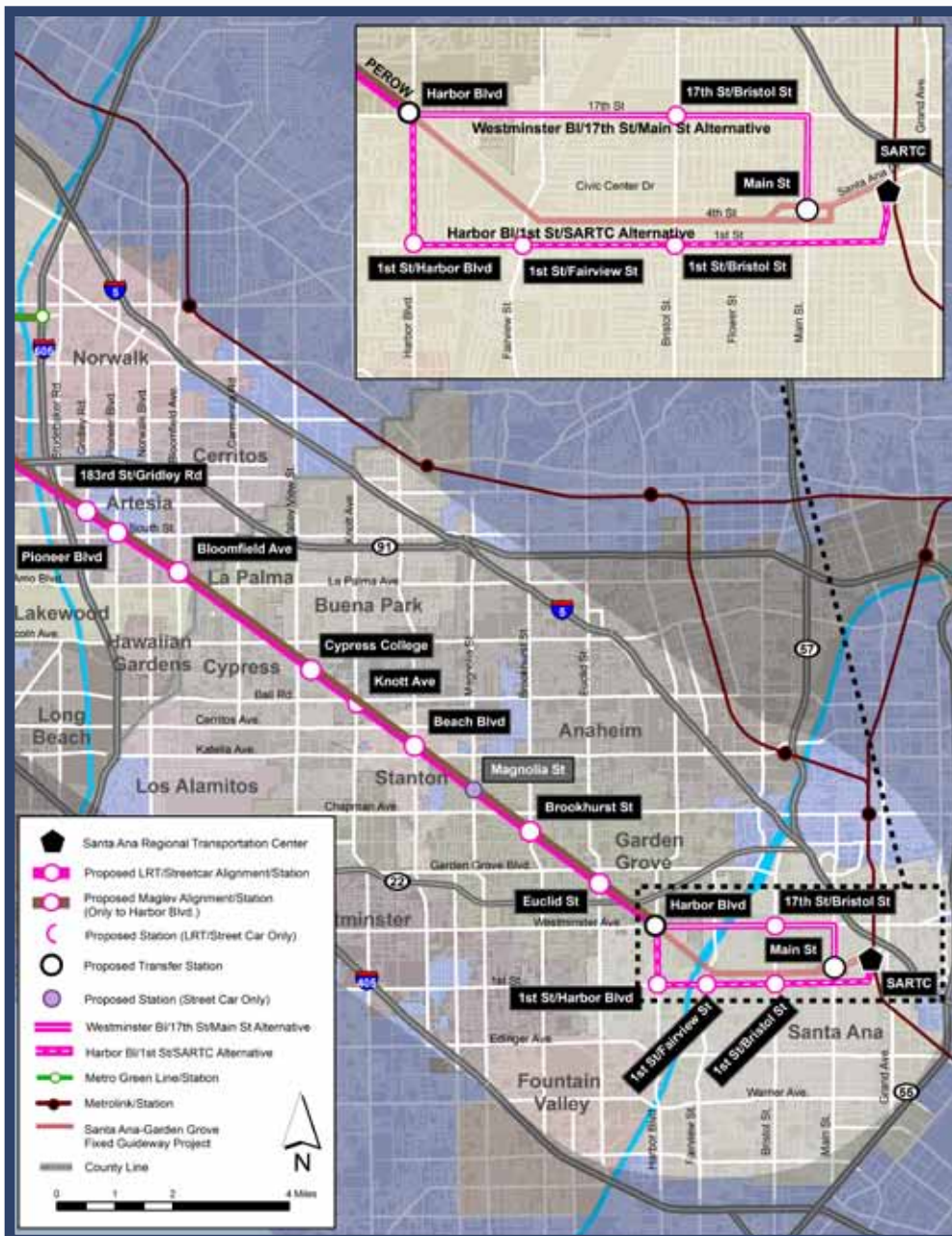
The Low Speed Maglev Alternative was designed as a totally grade-separated system due to operational needs, while the Street Car and LRT options were evaluated in two vertical configurations to bracket the benefits, impacts, costs, and resulting ridership of each configuration:

- A combination of at-grade and grade-separated operations based on physical conditions and engineering best practices; and
- Entirely grade-separated in a primarily aerial system with an underground segment in Downtown Los Angeles.

In the Southern Connection Area, which is all located in the City of Santa Ana, there are two alignment options running in the center of city streets:

- **The Harbor Boulevard/1st Street/SARTC Alternative** operates south from the future Harbor Boulevard Station along Harbor Boulevard, east on 1st Street and north on a realigned Santiago Street to SARTC where riders could transfer to Amtrak, Metrolink, Street Car, OCTA bus, and international bus services.
- **The Westminster Boulevard/17th Street/Main Street Alternative** runs east from the future Harbor Boulevard Station along Westminster Boulevard and south on Main Street in Downtown Santa Ana to interface with the City's future Street Car system. Riders would transfer to this system to reach SARTC.

The Street Car and LRT alternatives would follow one of these routes, while the Low Speed Maglev Alternative would terminate at the future Harbor Boulevard Station as requested by Santa Ana.



The proposed stations were identified through working sessions with the affected cities and transit agencies. They were located to interface with other Corridor transportation services and existing activity centers and future development and economic strategy plans.



BUS RAPID TRANSIT

Benefits:

Increases Corridor transit ridership and attracts new riders over No Build conditions.

Has the lowest capital cost among the build alternatives.

Low CEI - Falls within FTA's Cost-Effectiveness Index (CEI)

Challenges:

Lowest ridership and new riders among the alternatives.

Projected ridership exceeds BRT system capacity by 2-2.5 times.

Lack of community support - not viewed as viable solution; continuation of current transit situation.

Lack of City support - BRT viewed as not supporting land use and economic development plans.

Street-Running HOV-Running

Riders	57,300	67,200
New Riders	18,200	26,600
Cost	\$1.1 B	\$1.1B
CEI	\$20	\$16

*A Cost Effectiveness Index (CEI) is a tool used to measure travel hours saved by riders compared to the system's annual cost.

STREET CAR

Benefits:

Increases Corridor transit and attracts new riders over No Build conditions.

Has the lowest capital cost among the guideway alternatives

Challenges:

Has several fatal flaws for the PEROW/WSAB Corridor:

- **Street Cars must operate as single vehicles**, while forecasted Corridor ridership requires three-car trains.
- **Significant cost and traffic impacts** would result from single car operations
- **Cannot operate on Metro system**, as low-floor street cars cannot serve high-floor platforms.
- **May not meet FRA requirements** for sharing an active railroad ROW (north of Metro Green Line).
- **Seating does not serve Corridor demand.** Street Car vehicles provide more standee space, fewer seats.

New Mode would require new operator, facilities, and staff, along with operational learning curve.

Results in noise, vibration, and traffic impacts that will require mitigation.

Costs are similar to LRT without the advantages.

Lack of community and city support - not viewed as right fit for Corridor.

High CEI - needs to be lower to compete on national level; could compete locally.



	East Bank	West Bank 3
Riders	77,500	79,600
New Riders	28,900	29,000
Cost	\$2.6 B	\$2.9 B
CEI*		\$51

*A Cost Effectiveness Index (CEI) is a tool used to measure travel hours saved by riders compared to the system's annual cost.



LIGHT RAIL TRANSIT

Benefits:

Results in highest ridership among all alternatives.

Connects residents to regional rail system to north and south.

Existing operator and no learning curve.

Can utilize existing Metro rail system experience, tracks, facilities, and staff.

Has highest community and city support among all alternatives.

Most cost-effective of guideway alternatives.

Challenges:

Has high capital and operating costs.

Results in noise, vibration, and traffic impacts that require mitigation.

High CEI - needs to be lower to compete on national level; could compete locally.

	East Bank	West Bank 3
Riders	84,900	87,200
New Riders	32,700	32,800
Cost	\$2.9 B	\$3.2 B
CEI	\$48	\$48

*A Cost Effectiveness Index (CEI) is a tool used to measure travel hours saved by riders compared to the system's annual cost.

LOW SPEED MAGLEV

Benefits:

Increases Corridor transit and attracts new riders over No Build conditions.

Has the lowest operating and maintenance cost among the guideway alternatives.

Provides fastest travel speed and shortest travel times among all alternatives.

Results in lowest level of noise, vibration, and traffic impacts among the guideway alternatives.

Challenges:

Vehicle would require approval of CPUC, which can be a lengthy and costly process.

Significant capital cost does not appear fundable by current public funding availability, and the potential to attract this level of private funding is questionable.

Construction challenges due to new technology requirements.

Results in significant visual and privacy impacts; possible Environmental Justice impacts especially to neighborhoods in the Northern Connection Area.

New mode would require new operator, facilities, and staff, along with operational learning curve.

Limited community and agency support due to serious concerns about viability related to unproven technology and high capital costs.

High CEI - more than three times FTA threshold; higher than other local transit projects.



	East Bank	West Bank 3
Riders	74,000	76,000
New Riders	28,400	28,400
Cost	\$6.6 B	\$7.4 B
CEI		\$90

*A Cost Effectiveness Index (CEI) is a tool used to measure travel hours saved by riders compared to the system's annual cost.

GUIDEWAY ALIGNMENT OPTIONS

All three guideway alternatives have the PEROW/WSAB Corridor right-of-way (ROW), owned by Metro and OCTA, and a portion of the Northern Connection Area alignment in common. There are four route options connecting north from the PEROW/WSAB Corridor ROW to Union Station and two options connecting south to the SARTC.

Northern Connection Area

Common Section: All four guideway alternatives would use the San Pedro Subdivision, now owned by the Ports of Long Beach and Los Angeles, to connect north from the Corridor ROW terminus in the City of Paramount. The common segment runs from the end of Corridor ROW north to Randolph Street in the City of Huntington Park.

Initial conversations with the ports identified an interest in selling this railroad ROW for transportation use by Metro. Using the San Pedro Subdivision would require providing a freight track along with any new transit system's needs, to serve remaining customers and emergency travel for Alameda Corridor freight activity. Use of this ROW would require negotiations with the Alameda Corridor Transportation Agency (ACTA), Union Pacific (UP) Railroad, possibly the Federal Railroad Administration (FRA), and the California Public Utilities Commission (CPUC).

Two sets of route options would provide service north from the common section to Union Station:

- The **East Bank Alternative** operates north along the San Pedro Subdivision, crosses a corner of the Hobart Intermodal Yard to intersect with an UP-owned ROW. This route option would share the UP ROW for a short distance, and then turn north to run along the east bank of the Los Angeles River in ROW owned by Metro and operated by Metrolink. It would cross the river to end at Union Station.
- The **West Bank Alternative** would operate north along the San Pedro Subdivision to either operate along the west bank of the Los Angeles River north to reach Union Station, or turn west to operate in the former railroad ROW in the median of Randolph Street, and then north along several street and railroad ROW alignment options to Union Station. The West Bank Alternative has three viable sub-options that were studied:
 - The **West Bank 1** alternative would operate along the west bank of the river to just beyond the Redondo Junction where it would share the Metro-owned ROW to Union Station.
 - The **West Bank 2** option would turn west from the San Pedro Sub to run in the median of Randolph Street through Huntington Park, and then north to operate in the median of Pacific Boulevard, a former street car ROW to the Metro-owned Harbor Subdivision. It would use the Harbor Sub ROW under the Redondo Junction, and operate north similar to West Bank 1 Option.
 - The **West Bank 3** alternative would have the same initial route as West Bank 2, but would continue north along the Harbor Subdivision, city streets, and private property in a combination of aerial and underground configurations to daylight south of the Metro Gold Line Little Tokyo Station where it would use the existing at-grade Gold Line tracks to reach Union Station.

EAST BANK ALTERNATIVE

Benefits

- Second or third fastest end-to-end run times
- Second highest ridership and new riders
- May be able to share future maintenance yard with Metro Gold Line

Challenges

- Second highest capital cost
- Does not serve Huntington Park or Downtown Los Angeles
- Significant coordination requirements with multiple railroads, passenger service agencies, and possibly future CAHSR service

WEST BANK 1 ALTERNATIVE

Benefits

- Second lowest total capital cost

Challenges

- Second lowest travel times
- Lowest ridership and new riders
- Does not serve Huntington Park or Downtown Los Angeles
- Potential fatal flaw along LA River due to ROW use by high tension electrical towers
- Shares west bank ROW Metrolink, Amtrak, Metro Red Line operations, and possibly future CAHSR service
- Operates through constrained track system throat into Union Station

WEST BANK 2 ALTERNATIVE

Benefits

- Lowest total capital cost
- Serves Huntington Park

Challenges

- Slowest travel speed; highest run times
- Highest vehicle needs and costs
- Highest O&M cost
- Third lowest ridership and new riders
- Does not serve Downtown Los Angeles
- Similar to West Bank 1: must share river bank ROW and enter through constrained track system throat into Union Station

WEST BANK 3 ALTERNATIVE

Benefits

- Fastest end-to-end travel time
- Highest ridership and new riders
- Lowest O&M cost
- Serves Huntington Park and Downtown Los Angeles
- Opportunity for LRT service to interline with Metro LRT system
- Uses existing Gold Line tracks into Union Station

Challenges

- Highest total capital cost (most stations and grade-separation)
- Transitions from underground to at-grade operations in Alameda Street in Little Tokyo area

East Bank



West Bank 1



West Bank 2



West Bank 3

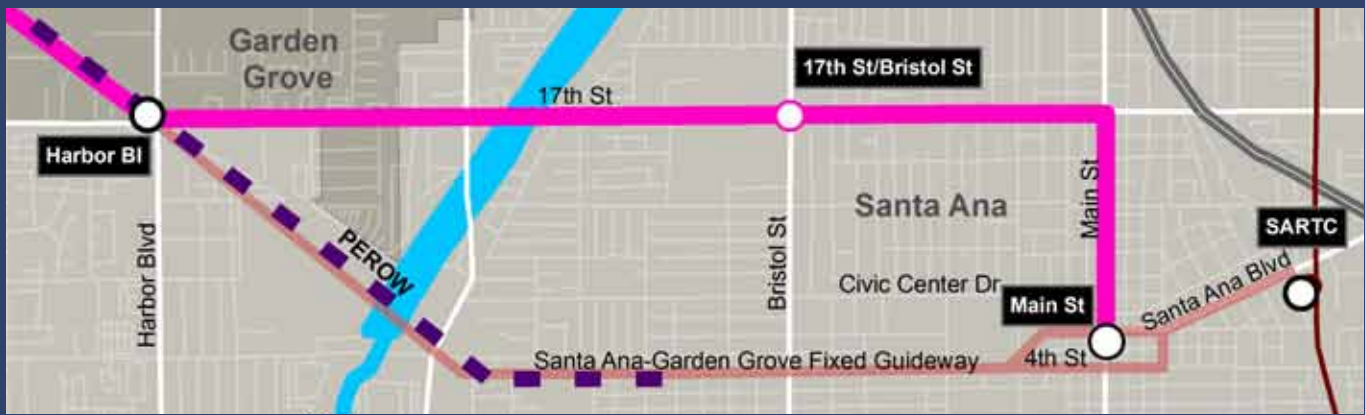


Southern Connection Area

At the southern end of the PEROW/WSAB Corridor ROW, all the alternatives, except the Low Speed Maglev Alternative, would leave the ROW to operate on Santa Ana city streets along one of two alternative routes:

- The **Westminster Boulevard/17th Street/Main Street Alternative** would serve the Harbor Boulevard Station and then travel east on Westminster Boulevard/17th Street, and south on Main Street.
- The **Harbor Boulevard/1st Street/SARTC Alternative** would leave the Corridor ROW after a future Harbor Boulevard Station to travel south on Harbor Boulevard, east on 1st Street, and then north on a realigned Santiago Street to the SARTC.

WESTMINSTER BL/17TH ST/MAIN ST ALTERNATIVE



Benefits

- Lower total capital cost (3.7 miles shorter alignment length)

Challenges

- Fewer stations
- Lower ridership and new riders
- Sensitive land uses on Westminster Boulevard/17th Street
- Constrained ROW width on Main Street; lined with historic buildings

HARBOR BL/1ST ST/SARTC ALTERNATIVE



Benefits

- Higher ridership and new riders

Challenges

- Higher capital cost due to longer alignment
- Higher number of impacted intersections

Summary of Final Screening Results

Criteria	TSM	BRT		Street Car		LRT		Maglev	
		Street	HOV	East Bank	West Bank 3	East Bank	West Bank 3	East Bank	West Bank 3
Alignment Length (miles)	206	38.2	39.0	35.2	34.5	35.2	34.5	29.7	29.2
Number of Stations	Varies	27	22	23	24	22	23	17	18
End-to-End Run Time ¹	Varies	1:21:11	1:18:30	1:09:55	1:07:15	1:02:09	1:00:12	43:06 ²	43:00 ²
Average Speed (mph)	Varies	32.4	32.6	30.7	31.1	35.2	34.5	40.2	40.2
Daily Boardings	85,580	57,340	67,210	77,545	79,600	84,900	87,150	74,020	75,990
New Riders	35,820	18,120	26,640	28,900	28,950	32,730	32,780	28,430	28,430
Cost to Ride (\$2011)	Varies ³	\$1.50	\$2.45 ⁴ \$3.00 ⁵	\$1.50	\$1.50	\$1.50	\$1.50	\$1.50 \$8.75 ⁶	\$1.50 \$8.75 ⁶
Corridor Boardings	100,670	126,000	133,680	133,035	140,180	144,670	147,340	142,360	146,150
Cost to Build (\$2010, millions)	\$249	\$1,075	\$1,082	\$2,575	\$2,918	\$2,969	\$3,216	\$6,6200	\$7,476
Annual Operating Cost (\$2011, millions)	\$56.9	\$41.6	\$53.1	\$217.9	\$217.5	\$216.0	\$204.0	\$152.3	\$151.9
Cost-Effectiveness Index	\$8.15	\$20.47	\$16.60		\$51.44	\$48.26	\$48.23		\$89.90
Environmental Impacts:									
Acquisition	Minor	0-10	0-15	15-20	15-20	15-20	15-20	50-70	50-70
Noise and Vibration	Minor	Minor	Minor	Medium	Medium	Major	Major	Minor	Minor
Visual and Privacy	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Major	Major
AQ and Climate Change Benefits	Minor	Minor	Minor	Yes	Yes	Yes	Yes	Yes	Yes
Traffic Impacts	Major	Major	Major	Major	Major	Major	Major	Minor	Minor
Other Impacts	Minor	Minor	Minor	Minor	Minor	Minor	Minor	Major	Major
Transfers: Union Station	1	1	1	1	1	0	0	1	1
SARTC	1	1	1	1	1	1	1	2	2

Notes:

¹ Union Station – SARTC

² Union Station – Santa Ana Street Car harbor Boulevard Station.

³ TSM Alternative includes local, limited stop, and Intercounty express service.

⁴ Metro Silver Line fare.

⁵ OCTA Intercounty Express Route fare.

⁶ Private Operator fare.

NEXT STEPS

Advisory Committee Meetings discussing study results and identifying recommendations

March, April, May 2012

Community Meetings seeking public and stakeholder input on final recommendations

May 2012

Steering Committee identifies final study recommendations

June 2012



**SOUTHERN CALIFORNIA
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For more information or to comment on this study:

- **Please visit the project website at**
www.pacificelectriccorridor.com
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